

REMARKS

Entry of this Amendment and reconsideration are respectfully requested in view of the amendments made to the claims and for the remarks made herein.

Claims 1, 3-8 and 10-22 are pending and stand rejected.

Claims 1 and 8 are independent claims.

Claims 1, 8 and 22 have been amended.

Claim 22 is objected to for including a grammatical error. Claims 1-6, 8 and 10-22 stand rejected under 35 USC 103(a) as being unpatentable over Inukai (USP no. 6,680,577) in view of Hirane (USP no. 4,967,192). Claim 7 stands rejected under 35 USC 103(a) as being unpatentable over Inukai and Hirane and further in view of Hack (USPPA 2002/0030647).

In maintaining the rejection of the claims, the Office Action further asserts that Inukai discloses that a duration of one phase is approximately n times a duration of the other phase when displaying an image (col. 3, lines 25-40; col. 8, lines 51-55, col. 9, lines 29-36, figures 5A-5F). In figure 5C Inukai shows that the duration of one phase D6 for a display field is approximately 32 times the duration of phase D1, and Inukai discloses that the duration of one phase corresponds to the controlled gradation of the EL element and the current through that element. Inukai discloses "[b]y combining the display fields, a desired gradation display can be performed (see col. 3, lines 62-64)."

With regard to the objection to claim 22, applicant thanks the Examiner for his observation and has amended the claim to correct the error noted.

For the amendment made to the claim, applicant submits that the reason for the objection has been overcome.

With regard to the rejection of claims 1-6, 8 and 10-22 as being unpatentable over Inukai in view of Hirane, applicant respectfully disagrees with and explicitly traverses

the rejection of the claims. However, in the interest of advancing the prosecution of this matter, independent claims 1 and 8 have been amended to further recite the operation of the display in that during a first phase each of the display pixels is sequentially driven with a corresponding one of a first plurality of currents for a first duration and each of the display pixels is sequentially driving during a second phase with a correspond one of a second plurality of currents for a second duration. No new matter has been added. Support for the amendment may be found at least on page 7, lines 9-14.

Inukai discloses an EL display capable of clear multi-gradation color display and an electronic device having an EL display. The gradation display is performed in accordance with a time division driver method that controls the amount of time an EL element formed in a pixel emits light and the amount of time that the pixel does not emit light.

In rejecting the claims, the Office Action refers to Figures 5A-5F for teaching the claim elements of a first and second phase having first and second durations, respectively, in which current is applied to a pixel. The Office Action refers to Figure 5C and 5D, in particular, to teach that the phases are related to each other. In acknowledging that Inukai fails to teach providing one of a plurality of currents during a display period, the Office Action refers to Hirane for teaching this element of the claims.

A review of the operation of Figures 5A-5F reveals that Inukai teaches a system wherein each frame may be divided into a plurality of partitions, which are divided into a write-in period and a corresponding display period. The write-in period is essentially fixed (63 milliseconds) and the display periods are organized in a decreasing relationship e.g., 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, etc. The length of time of each display period is based on the frame time adjusted by the fixed write-in time and a desired number of display periods.

Inukai disclose that "the order of the display periods may be arbitrary [and by] combining the display periods a desired gradation display, from among the 64 gradations can be performed." (see col. 3, lines 60-64).

Thus, Inukai teaches a system wherein up to 64 gradations may be obtained by applying a current for different time periods (display periods) based on a desired brightness level. For example a minimum level of brightness may be obtained by applying a current in the form of:

$$0*1 + 0*1/2 + 0*1/4 + 0*1/8 + 0*/16 + 0*1/32 + 1*1/64,$$

where 0 represents no current applied and 1 applies a full current during the appropriate time period..

Different levels of brightness may be determined as:

$$1*1 + 0*1/2 + 0*1/4 + 0*1/8 + 0*/16 + 0*1/32 + 0*1/64, \text{ - half bright; and}$$

$$1*1 + 1*1/2 + 1*1/4 + 1*1/8 + 1*/16 + 1*1/32 + 1*1/64 \text{ - full bright.}$$

Inukai fails to disclose a first and second plurality of currents that may be applied in each display period, as is recited in the claims.

That is, Inukai fails to disclose the determination of a brightness level in the form of:

$0*1 + 0*1/2 + 0*1/4 + 3*1/8 + 1*/16 + 1*1/32 + 2*1/64$ to achieve a half bright condition, for example, where the values 3 and 2 represents three times and two times, respectively, a reference current value.

Hirane discloses a system for outputting a plurality of reference current values, a selection circuit for specifying and selecting one of a plurality of reference current values from a reference current source to be applied as an input current to a current mirror circuit and an output control circuit for controlling the on and off states of an output current to be supplied to the output element of the current mirror circuit in accordance

with a light emission control signal. Hirane discloses that an n-bit current signal is associated with 2^n kinds of reference currents values and, hence, the output current is controlled in a corresponding number of stages, i.e., 2^n stages

The Office Action asserts that it would be obvious to including the multiple currents of Hirane into the teaching of Inukai to improve the quality of the display by compensating for aging effects.

However, Inukai fails to provide any suggestion or motivation to provide multiple currents within the display periods as the display periods disclosed by Inukai are created and organized to provide a single current for the selected displayed period. The incorporation of the teachings of Hirane would be contrary to the teaching of Inukai as there would not be any need for display periods if the 2^n currents of Hirane are applied to the device of Inukai.

In addition, even if the teachings of Hirane were combined with those of Inukai, the combination fails to provide any means for either limiting the number or duration of the display periods or determining a current level to be applied during one or more display periods.

Hence, the incorporation of the multiple currents into the teaching of Inukai would either alter the operation of Inukai or require addition processing to determine a brightness level that is not disclosed, suggested or contemplated by either device.

For example, with the ability to apply multiple currents to different display period, neither Inukai nor Hirane provide any teaching whether is it better to achieve a full brightness condition using a condition such as:

$$1*1 + 0*1/2 + 0*1/4 + 0*1/8 + 0*/16 + 0*1/32 + 0*1/64, \text{ or}$$

$$0*1 + 2*1/2 + 0*1/4 + 0*1/8 + 0*/16 + 0*1/32 + 0*1/64; \text{ or}$$

$$0*1 + 1*1/2 + 0*1/4 + 1*1/8 + 1*/16 + 2*1/32 + 4*1/64, \text{ etc.}$$

A claimed invention is prima facie obvious when three basic criteria are met. First, there must be some suggestion or motivation, either in the reference themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the teachings therein. Second, there must be a reasonable expectation of success. And, third, the prior art reference or combined references must teach or suggest all the claim limitations.

The Court in KSR v. Teleflex (citation omitted), however, has held that the teaching, suggestion and motivation test (TSM) is merely to be used as a helpful hint in determining obviousness and a bright light application of such a test is adverse to those factors for determining obviousness enumerated in the Graham v. John Deere (citation omitted).

The Court further acknowledged that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art... [I]t is important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." (citation omitted).

Although the Office Action has presented a reason for combining the teachings of the cited reference, i.e., improved quality, the combination of Inukai and Hirane introduces new problems that have not been considered by either party with regard to determining a combination of currents and display times that may generate improved signal quality.

Accordingly, the combination of Inukai and Hirane cannot render obvious the subject matter recited in the independent claims, as the resultant combined device fails to have a reasonable expectation of successfully performing the operations cited in the claims.

For at least this reason, applicant submits that the reason for the rejection of the claims has been overcome.

With regard to the rejection of the remaining claims, these claims depend from independent claims 1 and 8 and, hence, are also allowable by virtue of their dependency upon an allowable base claim

For the amendments made to the claims and for the remarks made, herein, applicant submits that the reason for the rejection of the claims has been overcome and respectfully requests that the rejection be withdrawn and a Notice of Allowance be issued.

Applicant denies any statement, position or averment stated in the Office Action that is not specifically addressed by the foregoing. Any rejection and/or points of argument not addressed are moot in view of the presented arguments and no arguments are waived and none of the statements and/or assertions made in the Office Action is conceded.

Applicant makes no statement regarding the patentability of the subject matter recited in the claims prior to this Amendment and has amended claims 1 and 7 solely to facilitate expeditious prosecution of this patent application. Applicant respectfully

reserves the right to pursue claims, including the subject matter encompassed by the originally filed claims, as presented prior to this Amendment, and any additional claims in one or more continuing applications during the pendency of the instant application.

Should the Examiner believe that the disposition of any issues arising from this response may be best resolved by a telephone call, the Examiner is invited to contact applicant's representative at the telephone number listed below.

No fees are believed necessary for the timely filing of this paper.

Respectfully submitted,
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